Supplement to the Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada

Transportation

If the U.S. Department of Energy builds a repository at Yucca Mountain, spent nuclear fuel and high-level radioactive waste would be moved from commercial utility sites and government installations throughout the country to southwestern Nevada. The Department could transport these materials through approximately 45 states and 30 tribal jurisdictions. The *Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* evaluates the potential impacts of these shipments on people and the environment.

Experience and technology for safe shipments

Since 1965, more than 2,500 shipments of spent nuclear fuel have been safely carried out in the United States between nuclear power plants, government research facilities, and industrial complexes. This excellent safety record has been achieved through use of shipping container technology and comprehensive safety procedures. Any future shipments the Department would make to Yucca Mountain would employ the same safety features and procedures. Proposed shipments of commercial spent fuel to a repository would be regulated by the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Transportation (DOT). The Department of Energy intends to continue its excellent track record in safe shipments.

Casks are designed to shield radiation and withstand severe accidents

All spent nuclear fuel and high-level radioactive waste destined for a repository will be in solid form for transportation and disposal. These materials would be transported to a repository in large, strong containers, called casks, on trains, barges, and trucks.

Terms used in this fact sheet

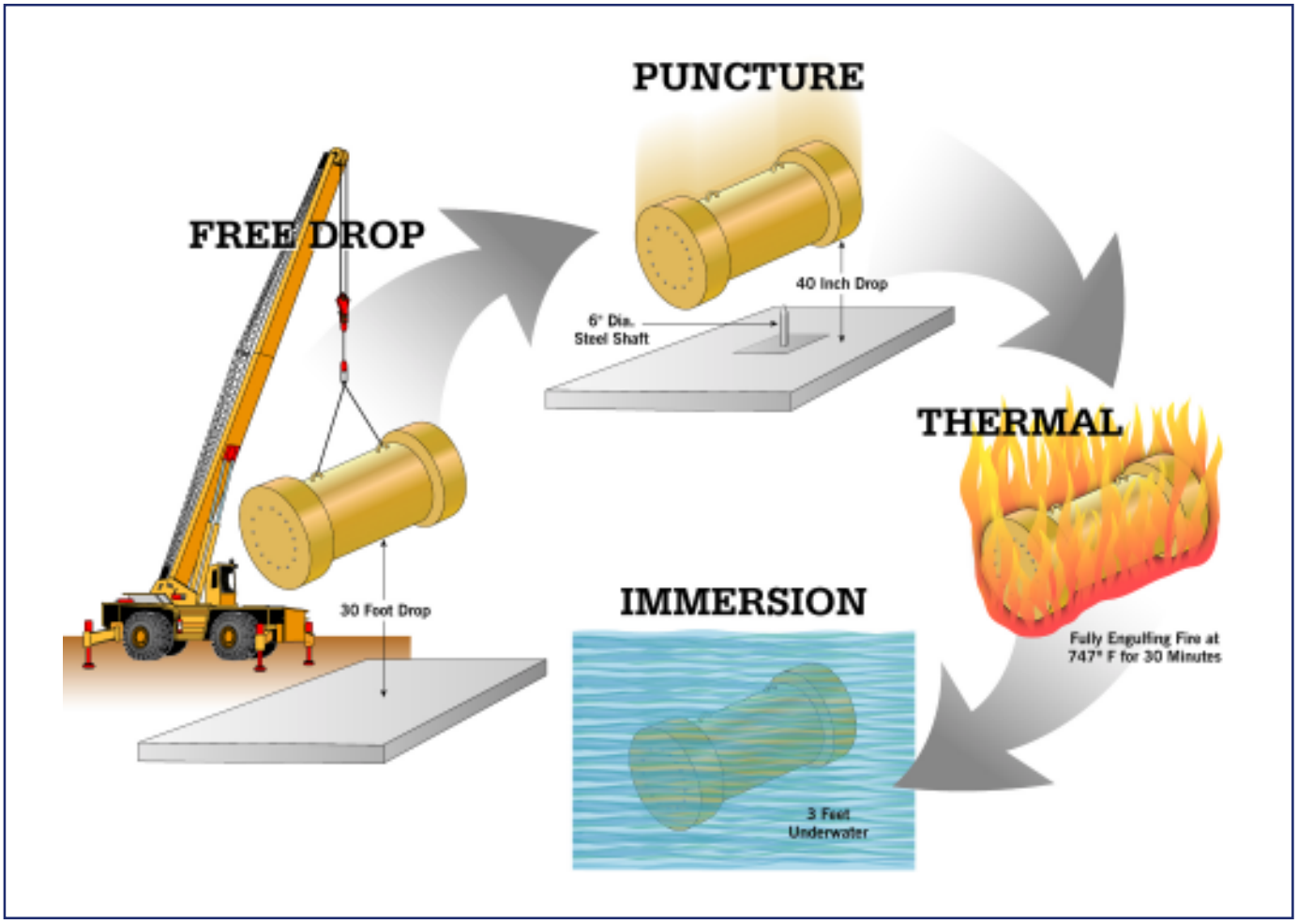
Cask: A heavily shielded container that meets regulatory requirements for shipping spent nuclear fuel or high-level radioactive waste by providing containment of radioactive materials, radiation and thermal shielding, and criticality control.

Intermodal transfer station: A facility, at the juncture of a rail line and road, used to transfer shipping casks from rail to truck or from truck to rail.

National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.): The federal statute that is the national charter for protection of the environment and establishes requirements for an environmental impact statement.

Nuclear Waste Policy Act of 1982, as amended (42 U.S.C. 10101 et seq.): The federal statute that defines a federal system for the management of spent nuclear fuel and high-level radioactive waste.

Preferred route: Defined by the U.S. Department of Transportation as the Interstate System highways, including Interstate System beltways and bypasses. State and tribal routing agencies can designate alternate preferred routes, in addition to, or in lieu of, federally designated preferred routes.



Casks used for train shipments are much larger and can contain more waste than those used for truck shipments. Loaded rail casks can weigh as much as 136 metric tons (150 tons); loaded truck casks can weigh up to 23 metric tons (26 tons).

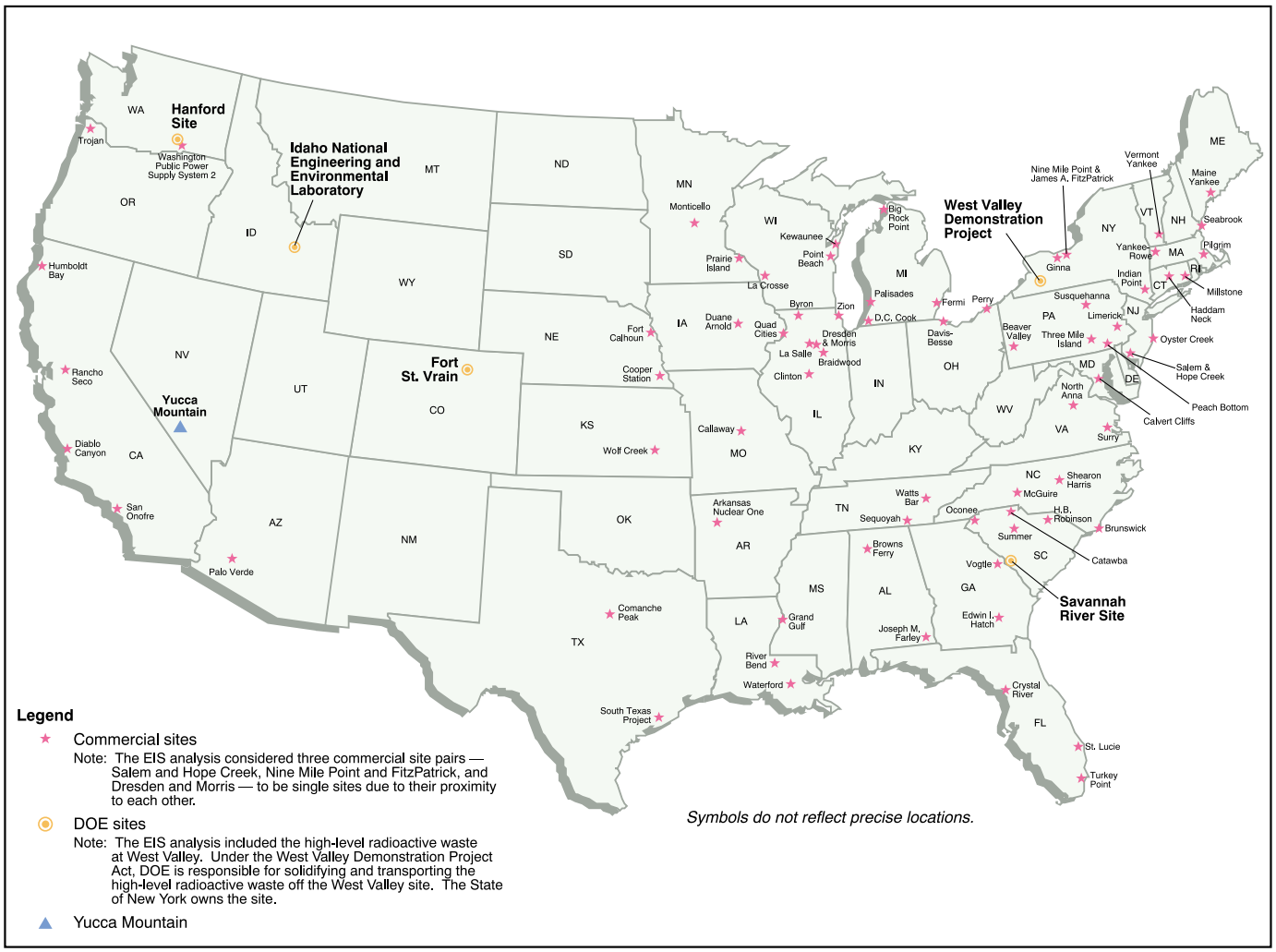
Under the Nuclear Waste Policy Act of 1982, as amended, the Department is required to use only casks that are certified by the NRC for transporting spent nuclear fuel and high-level radioactive waste to a repository. To certify a cask, the NRC requires a design to withstand a series of impact, puncture, and fire tests, thereby providing reasonable assurance that packages will withstand serious transportation accidents.[1] A cask design must demonstrate that it can and will protect against radiological release to the environment under the hypothetical accident conditions consecutively posed in a 9-meter (30-foot) free-fall on to an unyielding surface; a puncture test allowing the container to free-fall 1 meter (40 inches) onto a steel rod 15 centimeters (6 inches) in diameter; a 30-minute, all-engulfing fire at 800 degrees Celsius (1475 degrees Fahrenheit); and immersion under 0.9 meter (3 feet) of water. For casks designed to transport spent fuel, an additional hypothetical accident condition is required in which an undamaged package must be subjected to a one-hour immersion under 200 meters (655 feet) of water.

Regulations that protect you

The DOT and the NRC share primary responsibility for regulating the safe transport of radioactive materials in the United States. These regulations are rigorously enforced to provide a safe and effective transportation system.

The DOT regulations are contained in the *Code of Federal Regulations, Title 49*. This includes requirements for selecting transportation routes and for loading, trans-

[1] NRC regulations for cask designs are detailed in the *Code of Federal Regulations, Title 10, Part 71*



1 NRC regulations for cask designs are detailed in the *Code of Federal Regulations, Title 10, Part 71*

porting, and unloading shipments. The DOT regulations also specify safety requirements for transportation vehicles and the training requirements for personnel who handle and transport radioactive materials.

The NRC requirements are in the *Code of Federal Regulations, Title 10*. These requirements include the criteria for obtaining NRC certification of cask designs. The NRC also establishes and enforces physical protection requirements that guard against the possibility of shipment sabotage.

Plans for shipments to a repository

It is uncertain when plans for repository shipments will be finalized. If the NRC eventually issues licenses to construct and operate a repository, the earliest a repository would be ready for waste emplacement is 2010.

Transportation plans would include details about transportation modes, routes, and shipment schedules. Because the draft environmental impact statement examines the impacts of different transportation options, it provides valuable infor-mation for transportation of radio-active materials to a repository.

National transportation analysis

If the Department builds a repository at Yucca Mountain, a combination of transportation modes (truck and train and some limited use of barges) would be used to move radioactive materials from 77 sites located in 35 states (this includes both commercial and government facilities). The national transportation analysis for the draft environmental impact statement identifies the potential impacts on people and the en-

vironment during normal transportation activities and under potential accident conditions.

The routes assumed in the draft environmental impact statement may or may not be the actual routes for repository shipments. For truck shipments, the draft environmental impact statement analyzed the impacts of using DOT preferred routes (see definition on page 1). State and tribal routing agencies, however, may designate alternate truck routes within their respective jurisdictions. Currently, there are no federal rail routing regulations, so the impact statement analysis assumed the use of rail routes based on historic rail industry practices.

Possible transportation impacts in Nevada

If a repository were built at Yucca Mountain, shipments of spent nuclear fuel and high-level waste would arrive in Nevada by train and/or truck. Shipments that arrive by truck would continue directly to the repository. However, rail access to Yucca Mountain does not currently exist. Therefore, the Department is considering options for transporting rail shipments.

One option for train shipments is for the Department to build a branch rail line to the repository that would connect from an existing main rail line in Nevada. The draft environmental impact statement includes an evaluation of five potential rail corridors. The rail corridor evaluation identifies the potential impacts on people and the environment that could result from rail line construction and operation.

Another option for transporting rail shipments in Nevada is to unload them from rail cars onto large heavy-haul trucks. The heavy-haul trucks would then transport the casks on existing roads or highways to the repository. This option would require the construction of an intermodal transfer station for receiving and transferring rail casks. The draft environmental impact statement evaluates the potential impacts of constructing and operating an intermodal transfer station at three potential locations within Nevada. This evaluation also examines the potential impacts from upgrading and maintaining roads for heavy-haul trucks.

Protecting people and the environment

With decades of experience and strict regulations, government and industry have developed a safe and effective process for transporting radioactive materials. The draft environmental impact statement provides additional information on the possible environmental impacts from repository shipments. The Department is committed to limiting these impacts and to protecting people and the environment as it addresses the national environmental problem of disposing of spent nuclear fuel and high-level radioactive waste.

U.S. Department of Energy
Office of Civilian Radioactive Waste Management

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